Putting Research to Work

RD&T E-Newsletter, June 2004

Technical information for state DOT highway professionals

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WisDOT RD&T Home

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Research World

WisDOT Pilot Project Shaves Time Off Appraisal Process

Following an FHWA scan tour of right of way and utility coordination practices in Europe, WisDOT embarked on a pilot project to modify its appraisal review process based on European best practices. A year later, the results are in: By eliminating a central office review of their real estate appraisals, WisDOT District 2 appraisers cut more than two months off the acquisition time needed for a resurfacing and realignment project. WisDOT is now testing the streamlined process on a second project. See the just-published FHWA report of states' experiences with right of way pilot projects at http://www.fhwa.dot.gov/realestate/pilotsum04.htm.

Keep Up on Prefabricated Bridge Element Practices

WisDOT's impressive Mississippi River Bridge is one of several new projects posted on FHWA's prefabricated bridge project page at http://www.fhwa.dot.gov/bridge/prefab/all.cfm. Recent postings include information on a Connecticut truss-span bridge that included a 320-foot prefabricated center span that saved ConnDOT over $1 million, and use of a prefabricated, float-in cofferdam system in the deep waters of the Sacramento River. Track the latest in prefabricated bridge technology at http://www.fhwa.dot.gov/bridge/prefab/index.htm.

Self-Compacting Concrete Edges Its Way to Our Shores

Japan and European nations have been developing uses of self-compacting concrete, pours that do not require vibration, on bridges for several years. Its nascent use in the U.S. currently extends only to architectural, precast concrete. Research begun in South Carolina and Kansas may herald its use in bridge-building here. See http://www.fhwa.dot.gov/bridge/scc.htm. Courtesy of the TRB E-Newsletter.

Lane Markings Save Lives, Australia Study Affirms

Reflective lines dividing a road's lanes are the most cost-effective road safety measure, reducing accidents by up to 60%, according to a new report from the Australian Institute of Traffic Planning and Management. Properly maintained lines are even more crucial as the driving population ages, the report says. See http://www.smh.com.au/articles/2004/05/11/1084041411408.html, and view the report at http://www.aitpm.org.au/annex/0405_LineMarkingStandards_FinalReport.pdf. Courtesy of Transportation Communications Newsletter.

To receive notice of **Putting Research to Work** each month, e-mail wisdotresearch@dot.state.wi.us.
Previous issues may be found at http://www.dot.wisconsin.gov/library/publications/format/newsletters/rdt.htm.

Other e-newsletters for transportation professionals:
TRB E-Newsletter from the Transportation Research Board: http://gulliver.trb.org/news/.
The AASHTO Journal from the American Association of State Highway and Transportation Officials: http://www.transportation.org/publications/journal.nsf.
CTS Research E-News from the University of Minnesota: http://www.cts.umn.edu/publications/enews/.
Texas Transportation Researcher from TAMU's Texas Transportation Institute: http://tti.tamu.edu/researcher/.
Austroads Newsletter from Austroads: http://www.austroads.com.au/newsletter.html.
Transportation Communications Newsletter: http://groups.yahoo.com/group/transport-communications/.

Designing for the Future

Madison Street Redesign Focuses on Pedestrians

WisDOT's reconstruction of East Washington Avenue, a gateway to the Capitol square, was designed with pedestrians in mind. The five-year project, which began construction this spring, features crosswalks highlighted with colored, textured concrete; wider median noses to create pedestrian refuge areas; and "bulbed-out" curb lines on side streets that lessen crossing length and handicap ramp steepness. See http://www.dot.wisconsin.gov/projects/d1/eastwash/index.htm, and view project plans at http://www.ci.madison.wi.us/ewashingtonave/.

Community Input Key in Marquette Interchange Reconstruction

After 35 years of service, Milwaukee's Marquette Interchange—which links three interstate highways—is due for an upgrade. As WisDOT engineers draw up plans to replace the interchange's rapidly deteriorating bridges, they're taking the project's visual impact seriously. Architectural retaining wall treatments, ornamental rails, and pedestrian-friendly lighting are among the community-sensitive design elements proposed. See http://www.dot.wisconsin.gov/projects/d2/marquette/csd.htm.

Property Management Efforts Lead to Award for Ohio DOT

When property acquisitions for a road widening project left Ohio DOT with several landlocked, unmarketable properties, the department saw an opportunity. By creating easements across parcels acquired as uneconomic remnants, ODOT provided access to three landlocked, improved parcels, saving the homes from demolition and leading to a public auction that brought in revenue for the department. Read more about this project and other winners of FHWA's 2004 Excellence in Right-of-Way Awards, announced last month, at http://www.fhwa.dot.gov/realestate/rowea04/index.htm.

Unconventional Intersection Design Keeps Traffic Moving

As traffic volume through an intersection increases, site-specific design solutions can help alleviate congestion. One relatively new design is the quadrant roadway intersection, which removes traffic-slowing left turns from the main intersection, instead shuttling them onto a new roadway added in one quadrant of the intersection. See the article in the latest issue of *Better Roads* at http://www.betterroads.com/articles/may04b.htm, and read more about QRIs at http://www.pbworld.com/news_events/publications/network/Issue_50/50_35_ReidJ_QuadrantRoadways.asp.

Environmental Justice at Forefront of Kentucky Project

A street extension in Lexington, Ky., has given the Kentucky Transportation Cabinet a chance to incorporate neighborhood planning and road planning in the same project. The project features a 25-acre reconstruction of a low-income area, including an upgraded park and community services, that pledges to keep the existing community intact. Read about this and other examples of environmental leadership in the latest issue of *Public Roads* at http://www.tfhrc.gov/pubrds/04mar/06.htm.

Taking the Risk Out of Real Estate Acquisition

New Hampshire DOT knows the frustration of having to clean up contaminated property that was purchased at full market value. To minimize such experiences, NHDOT is now using a new risk assessment system that uses handheld computers to quickly collect data in the field and upload it to a database, allowing engineers to make early decisions about avoiding or addressing contamination. Read more in AASHTO's "Success Stories" section at http://www.transportation.org/aashto/success.nsf/allpages/2004-05NewHampshire.

Construction and Materials Innovations

Materials Drive Construction Acceleration

An informative new Web site for the Accelerated Construction Technology Transfer group—a joint effort of TRB, AASHTO and FHWA—shows the cumulative benefit of materials and construction innovation with ground-breaking planning and design efforts. Case studies include efforts by New Jersey to use polymer concrete and fiber-reinforced polymer composites, and California and Montana's experiences with prefabricated bridge components. Find these and other case studies at http://www.fhwa.dot.gov/construction/accelerated/ir04_2.htm.

Washington State Floating Bridge Draws Attention

The replacement of the State Route 520 floating bridge over Lake Washington in Seattle includes a variety of innovations, including self-consolidating concrete, temporary pontoons, and design-build contracting for certain structural elements. Find more information on the potentially $3 billion project at http://www.tfhrc.gov/focus/may04/04.htm and http://www.fhwa.dot.gov/construction/accelerated/ir04_2.htm.

States' FRP Innovations Showcased

The most recent issue of *Focus* reports on various uses of fiber-reinforced polymer composites in bridge deck construction, repair and retrofitting. While Wisconsin's ground-breaking work on mechanically fitted FRP strips (see March 2004 *Putting Research to Work*) is not mentioned, the article cites examples like Maryland's use of an FRP deck on a steel bridge, New York's use of laminates on concrete beams, and the growing use of wet lay-up fabrics. See http://www.tfhrc.gov/focus/may04/01.htm.

Who Hears the Rubber Hit the OGFC Asphalt Road?

In a test of 18 asphalt and portland cement concrete pavements, researchers for Colorado DOT found that open-graded friction course pavements are the quietest surface for tires to roll across. Other conclusions include that hot-mix asphalt pavement noise increases as the pavement ages, and that all tested texturing procedures produced similar noise levels on recently built PCC pavements. See http://www.dot.state.co.us/publications/PDFFiles/tirenoise.pdf. Courtesy of the TRB E-Newsletter.

Blended Cements Explained

Iowa State University's PCC Center just posted a summary of recent research on blended cements. Called "Blended Cements: Improving Concrete Properties Using Environmentally Responsible Mixtures," the report finds that mixtures enhanced with fly ash or slag require longer curing times or higher temperatures as supplementary materials are increased. The mixtures can outperform ordinary concrete in hot weather, and their performance varies with the source and proportion of materials. See http://www.ctre.iastate.edu/pubs/t2summaries/blended_cements.pdf.

Latest in Asphalt Research Released

The North Central Superpave Center's most recent *National Superpave News* features several informative pieces, including an article on the determination of air void content in stone matrix asphalt. Other pieces evaluate the use of simple performance tests to measure asphalt rut depth, and discuss possible changes to current Superpave compaction levels based on findings from various gyratory compactor instruments. Read these articles and more at http://ce.ecn.purdue.edu/~spave/Newsletters/national%20-%20Spring%202004.pdf.

What a Little Acid Can Do for Your Binder

The Asphalt Institute's spring meeting featured three presentations on acid modification of asphalt binder mixes. Just posted online, the presentations covered topics including the basics of using polyphosphoric acid in binders; rutting and moisture resistance in binders modified with polyphosphoric acid; and moisture sensitivity and anti-stripping agent interactions. See http://www.asphaltinstitute.org/ai_pages/Technical_Focus_Areas/Tech_Issues_Materials.asp.

Operating/Optimizing the System

Smoothing Out Bumps in the Road

Transportation agencies are turning to improved pavement and construction techniques and earlier maintenance to keep bumps at bay. In a recently released study, The Road Information Program looks at the condition of major roads in the country's most populous areas, as well as the latest developments in repairing and building roads to last longer. Read the full report at http://www.tripnet.org/BumpyRoadsStudy042804.PDF.

FHWA Offers Self-Assessment Tool

How *you* doin'? FHWA's Office of Operations would like to help you answer that question. With the help of more than 40 state and local agencies, FHWA has developed a self-assessment tool to help agencies evaluate their roadway operations performance and find ways to improve. Download the tool at http://www.ops.fhwa.dot.gov/Travel/Deployment_Task_Force/registration2.htm.

New Guide for Highway Incident Management

The *Model Procedures Guide for Highway Incidents*, funded by U.S. DOT's Intelligent Transportation Systems Public Safety Program, shows how an incident management system used for many years by firefighters and emergency management agencies can be applied to highway incidents. The document provides examples of command structures for a wide variety of highway incident scenarios, from terrorist events to winter storms, parades, hazardous materials spills, and motor vehicle crashes. The guide will be published this summer. See the draft version online at www.ims-consortium.org/highwaydraft.pdf. Link to the *Public Roads* article: http://www.tfhrc.gov/pubrds/04mar/02.htm.

Operations Lessons from Disney

You can learn a lot from a mouse. The efficiencies of Walt Disney World's Magic Kingdom and Universal Studios' Islands of Adventure at parking management, transit management, traveler information and demand management are no fairy tale. Read how Mickey and friends do it at http://www.nawgits.com/ite/JB04EA30.pdf. Courtesy of the ICDN Newsletter.

Real-Time Highway Maintenance Using Spatial Technologies

Oracle Corp. and Exor Corp. have teamed up to develop a new modeling system for transportation asset management using spatial technology and GIS systems. Using the system, organizations can perform comprehensive, real-time maintenance work, resource dispatching for inspection, and cost and budget analysis. Link to the press release: http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=SVBIZINK3.story&STORY=/www/story/05-04-2004/0002166286&EDATE=TUE+May+04+2004,+08:01+AM.

Traffic Management for Your Health

A new traffic management system promises to help create healthier urban environments by correlating traffic conditions with the resulting levels of pollution. Called HEAVEN (Healthier Environment through the Abatement of Vehicle Emissions and Noise), the system facilitates real-time air quality, traffic and information management, and helps agencies assess the environmental impact of different traffic demand management strategies. See the article at Information Society Technologies: http://istresults.cordis.lu/index.cfm?section=news&tpl=article&BrowsingType=Features&ID=65141

Erosion Control with Recycled Materials

Texas DOT has found an innovative way to avoid the slippery slope of soil erosion. Treated with a combination of specialized compost made from recycled organic waste and wood chips, highway rights of way reestablish vegetation quickly and provide impressive environmental and economic benefits to the state. See the article in *Public Roads:* http://www.tfhrc.gov/pubrds/04mar/03.htm.

Safe Travel/Smart Travel

National Conference Focuses on I-43 Crash

The deadliest highway accident in Wisconsin history took center stage during the recent National Highway Visibility Conference in Madison May 18-19, sponsored by WisDOT, FHWA, UW-Madison and others. Speakers and attendees from around the world discussed the I-43 crash of 2002 and other visibility related incidents to determine how new technology and other countermeasures could help prevent them in the future. See WisDOT's press release on the conference at http://www.dot.wisconsin.gov/news/news/2004general/opa-hwyvisibilityconf102.htm.

Highways with Eyes for Safety

The latest creation from Astucia Traffic Management Systems is an embedded stud equipped with a camera that catches speeders, monitors traffic for criminals or stolen cars and even checks for bald tires. From the *International Herald Tribune*: http://www.iht.com/articles/520156.html.

Advanced Lens Technology May Improve Older Drivers' Performance

A new study shows that an advanced eye implant used in cataract surgery has the potential to improve the driving performance of older Americans, a key public safety issue in an automobile-dependent nation with an aging population. Link to the U.S. Newswire press release: http://releases.usnewswire.com/GetRelease.asp?id=119-05192004.

Cell Phone Signals May Help Gauge Congestion

The goal of this FHWA research is to determine whether cell phone signals from moving vehicles could be used to continuously and anonymously measure traffic congestion in terms of speed and volume at specific locations. See TRB Research in Progress: http://rip.trb.org/browse/dproject.asp?n=9495.

Eye in the Sky Helps Parents Monitor Driving Behaviors

The Teen Arrive Alive company (http://www.teenarrivealive.com/) uses advanced GPS and software technology to connect parents to their teenage drivers. Parents can call a dedicated line 24 hours a day to access a driver's location, direction and speed, or access the TAA Web site to monitor a driver in real-time. From Business Wire: http://home.businesswire.com/portal/site/google/index.jsp?ndmViewId=news_view&newsId=20040521005266&newsLang=en.

Intelligent Vehicles Will Play Major Role in Roadway Safety

Today's high-tech new vehicles may have up to 200 sensors that measure everything from engine processes to outside air temperature. Intelligent vehicle advocates seek to capitalize on that information and use it to more efficiently and safely manage transportation systems. See National Geographic News: http://news.nationalgeographic.com/news/2004/05/0521_040521_smartcars.html#main.

Big Wins for Delphi in Steering Column Safety Market

Delphi Corporation continues to strengthen its position as a leader in the global steering column occupant protection market with nine new business wins during the first quarter of 2004 for vehicles across North America, Europe and Asia Pacific. Link to the press release: http://biz.yahoo.com/prnews/040519/dew002_1.html.

Lane Departure Warning Technology Finally Hits the Road

Nissan's Infiniti division announced that it will be the first automaker to install a Lane Departure Warning system that alerts the driver when the vehicle makes an unintended lane change. From *Trailer Life*: http://www.trailerlife.com/output.cfm?ID=823303&Newswire=1&StartRow=1.